

An Introduction to Short Burst Data (SBD)

For more information, see the SBD Web Site at

<https://sbd.pac.disa.mil>

or send email to

admin@sbd.pac.disa.mil

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Outline



- ➡ • Introduction
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 - Iridium Overview
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 - EMSS End-to-End Solutions
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 - SBD Overview
 - Typical Call Flow
 - Comparison of SBD and CSD Transfer Characteristics
 - SBD Service Description
 - Field Equipment Options
 - SBD / GPS Tracking Application – Example
- Conclusion



Introduction

Document Description

This presentation provides a brief introduction to the Short Burst Data (SBD) service available through the U.S. Department of Defense's Enhanced Mobile Satellite System (EMSS). This document and additional information may be found at the SBD web site at: <https://sbd.pac.disa.mil>

For information regarding EMSS and Iridium, please see the EMSS web site at: <http://inah.pac.disa.mil>, or the Iridium web site at: <http://www.iridium.com>

If additional information is required, contact the SBD administration team via email at admin@sbd.pac.disa.mil.



Introduction

Iridium Overview



- Short Burst Data (SBD) is a high-capacity, ultra-efficient data service that is part of the Iridium satellite communications system
- The Iridium system is composed of 66 low earth orbiting (LEO) satellites that provide 100% radio coverage of the earth's surface, which enables on-demand, real-time communications from any point on the globe to any other point
- One of the key attributes of the Iridium system is its cross-linked architecture, which enables the entire system to operate from a single or small number of gateways
- The next slides provide salient information about the Iridium constellation and the Enhanced Mobile Satellite System (EMSS) program

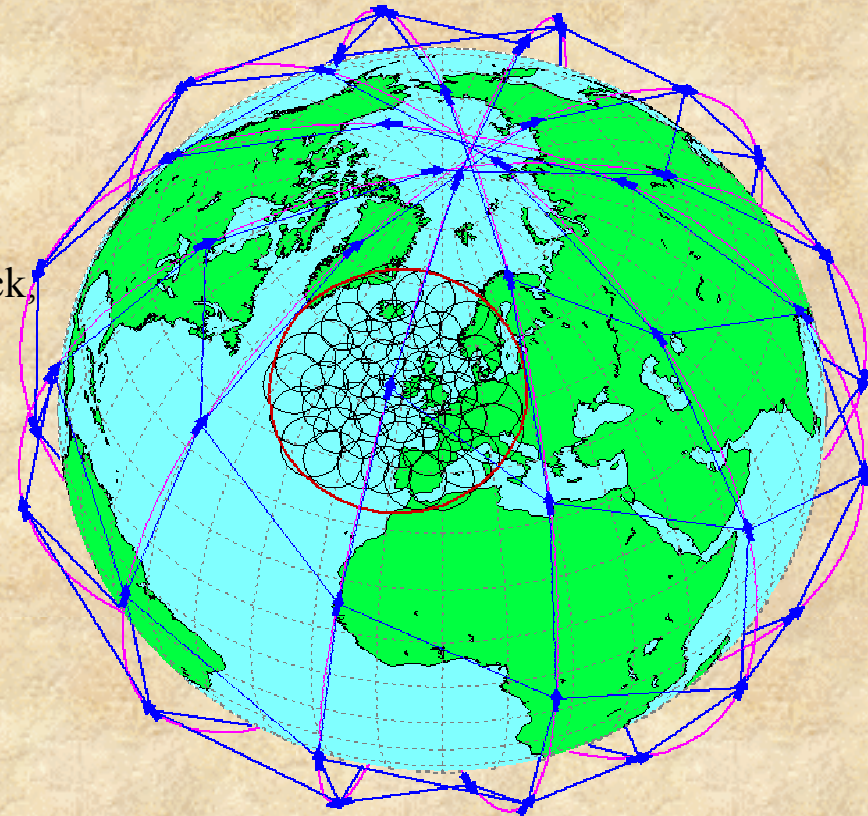


Introduction (cont.)

Iridium Overview (cont.)



- 66 active LEO satellites
 - 6 near-polar orbital planes with 11 active satellites each
 - 13 in-orbit spares
- Cross-linked constellation
 - All satellites are interconnected front, back, and side-to-side
 - Gateway(s) not required within satellite footprint
 - Packet-switched digital system
- Constellation viable until 2014 (Boeing, 2003)



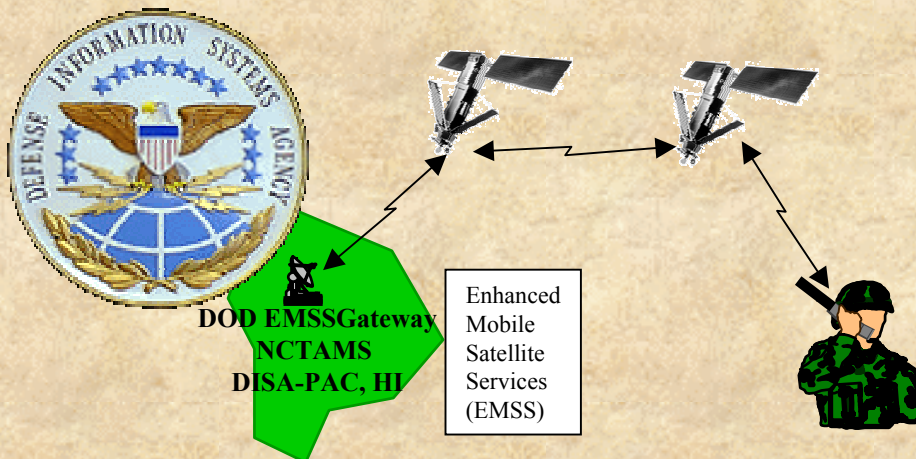


Introduction (cont.)

EMSS Overview



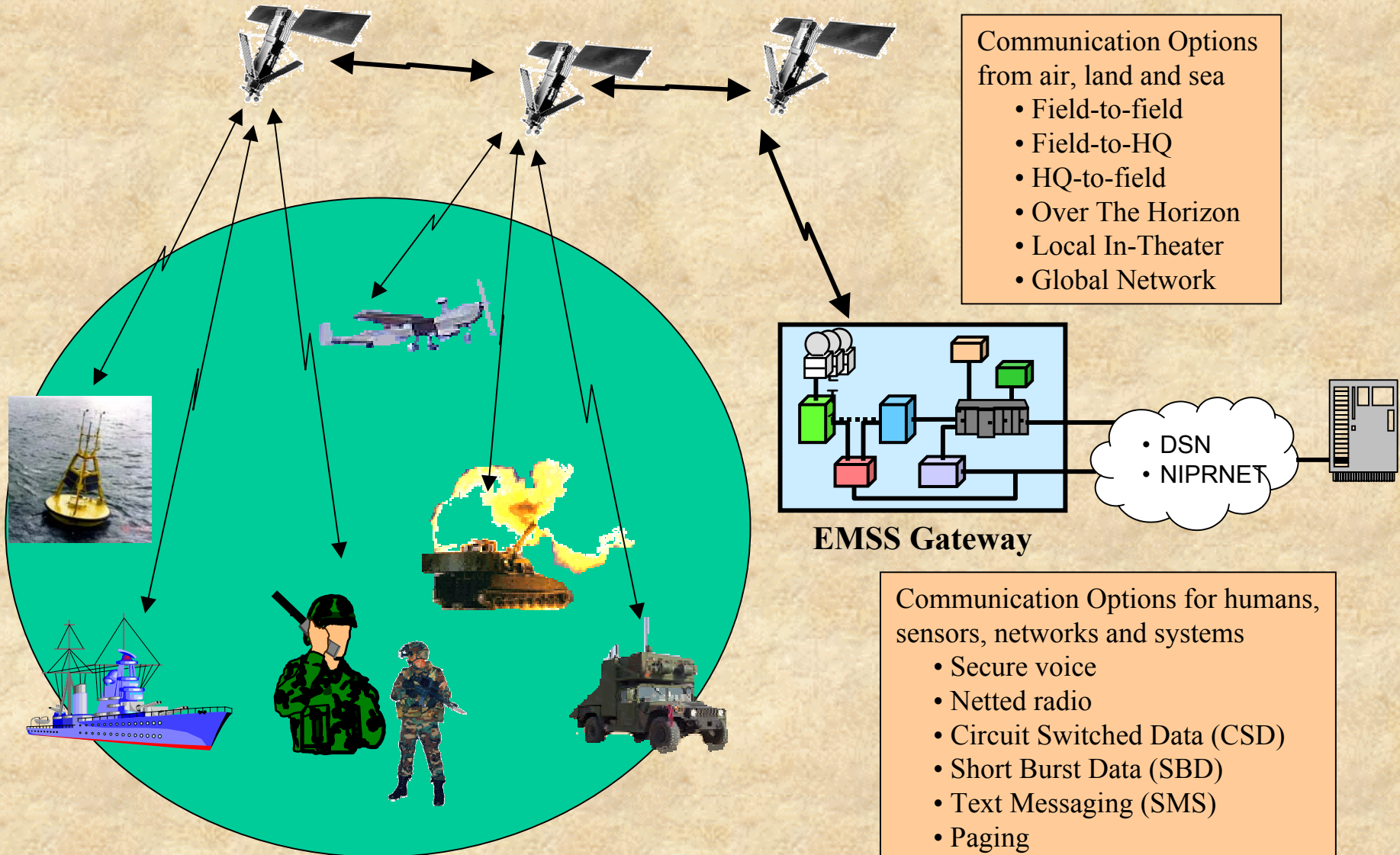
- **Worldwide Coverage**
- **Large DOD Infrastructure Investment**
 - Supports all commercial services
 - Voice, Paging, Messaging & Data
 - Enhancements to meet DOD's unique security requirements
 - Direct connectivity into DOD and commercial U.S. terrestrial networks
- **Security**
 - **Infrastructure on U.S. Soil**
 - **DOD-owned Gateway**
 - Located at NCTAMS-PAC (DISA-PAC) Wahiawa, HI
 - TS Facility
 - Call Handling
 - Call Detail Records
 - Location Privacy
 - Type 1 Encryption
- **Connectivity**
 - U.S. Commercial PSTN
 - DSN
 - Internet
 - NIPRnet





Introduction (cont.)

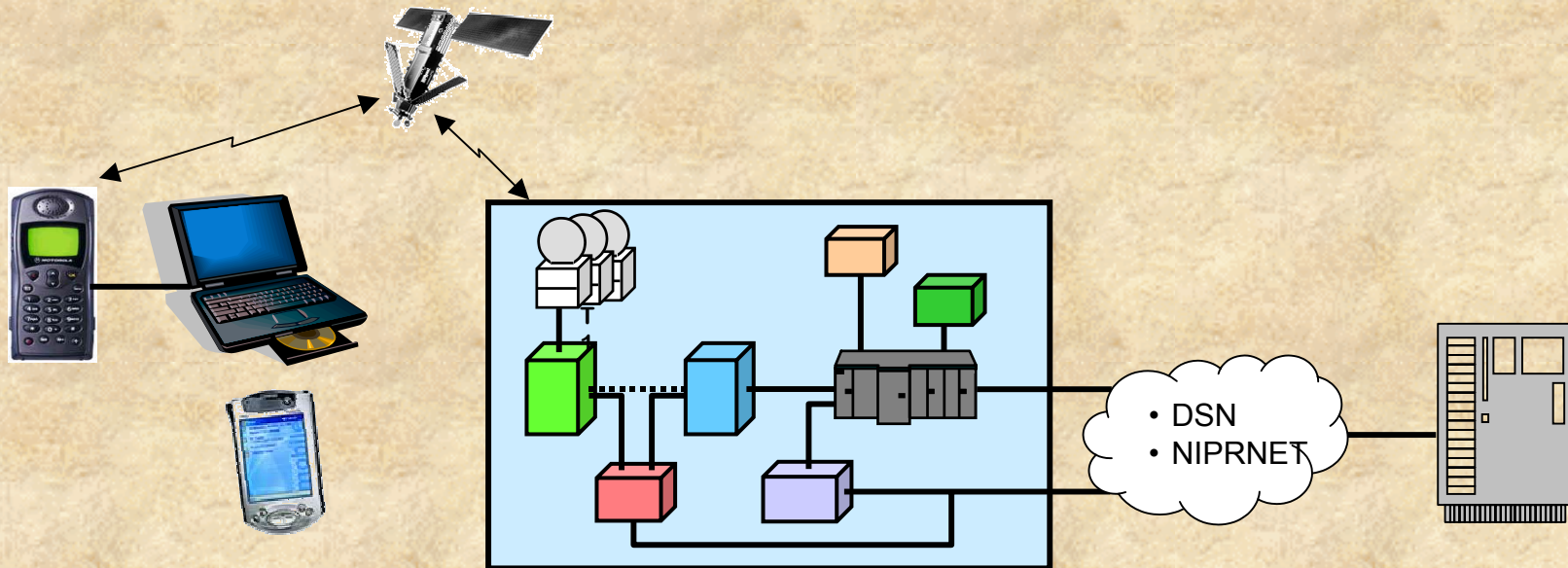
EMSS Communications Options





EMSS End-to-End Solutions

DoD Owns The Interfaces!



Field Units

- Handset software
- ISU integration
- Field application software

EMSS Services

- Voice and messaging
- Circuit-switched data (e.g., Apollo, RUDICS)
- Short Burst Data (SBD)
- Custom Services (e.g., dedicated circuits)

Enterprise Application

- SCADA data exfiltration
- Signaling
- Messaging
- Tracking
- Command & Control

*For more information, contact the EMSS Program Office
via email at admin@sbd.pac.disa.mil*



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Short Burst Data

Overview

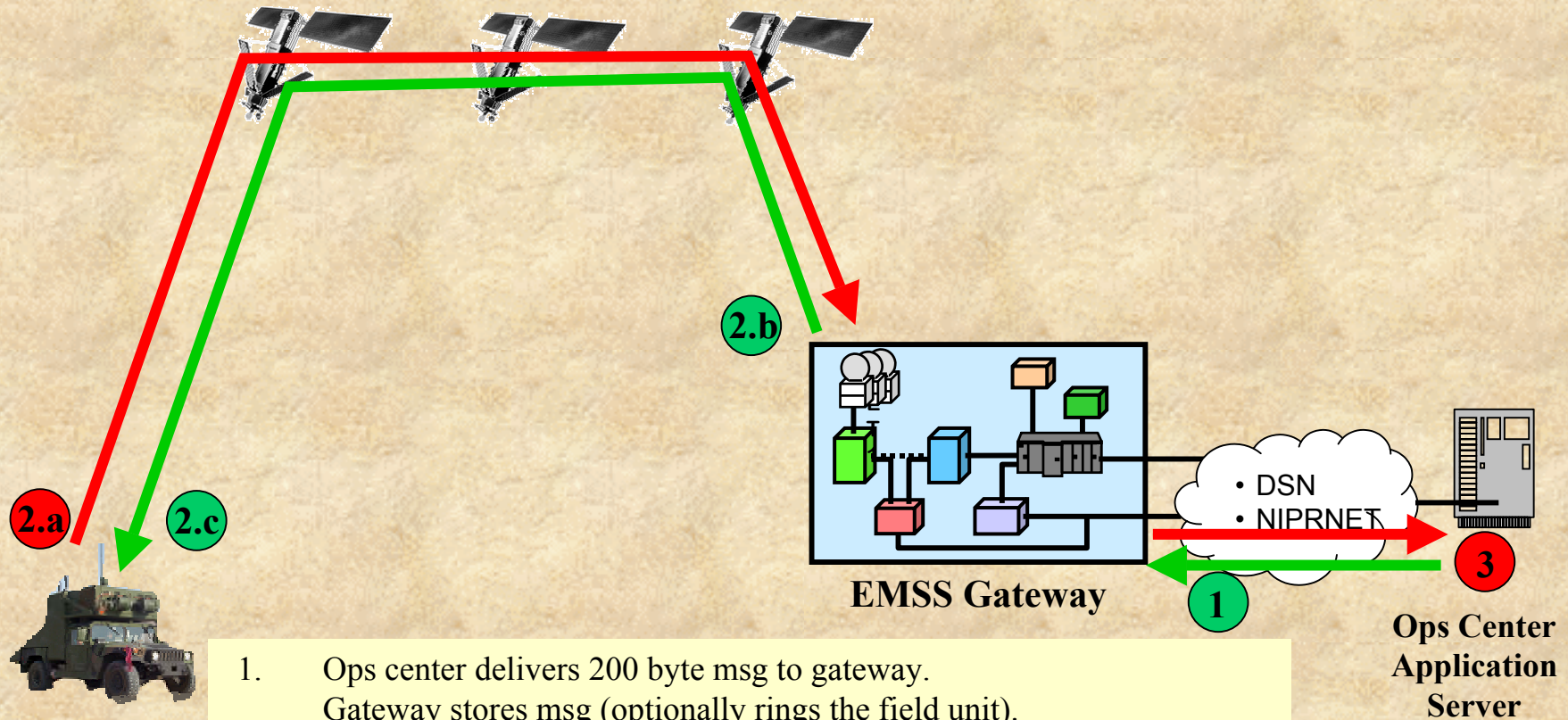


- An “ultra-efficient” method of sending small amounts of data across the Iridium network
 - 100 bytes in ~1 second (post satellite acquisition)
 - But flexible enough to handle larger payloads (up to ~2 kBytes)
- Best suited Iridium service for
 - LPI / LPD applications
 - Power / battery life sensitive applications
 - Large numbers of in-theater deployed units
- Well suited to client/server applications
 - Many field terminals \leftrightarrow operations center server(s)
 - But flexible enough to support field to field communications



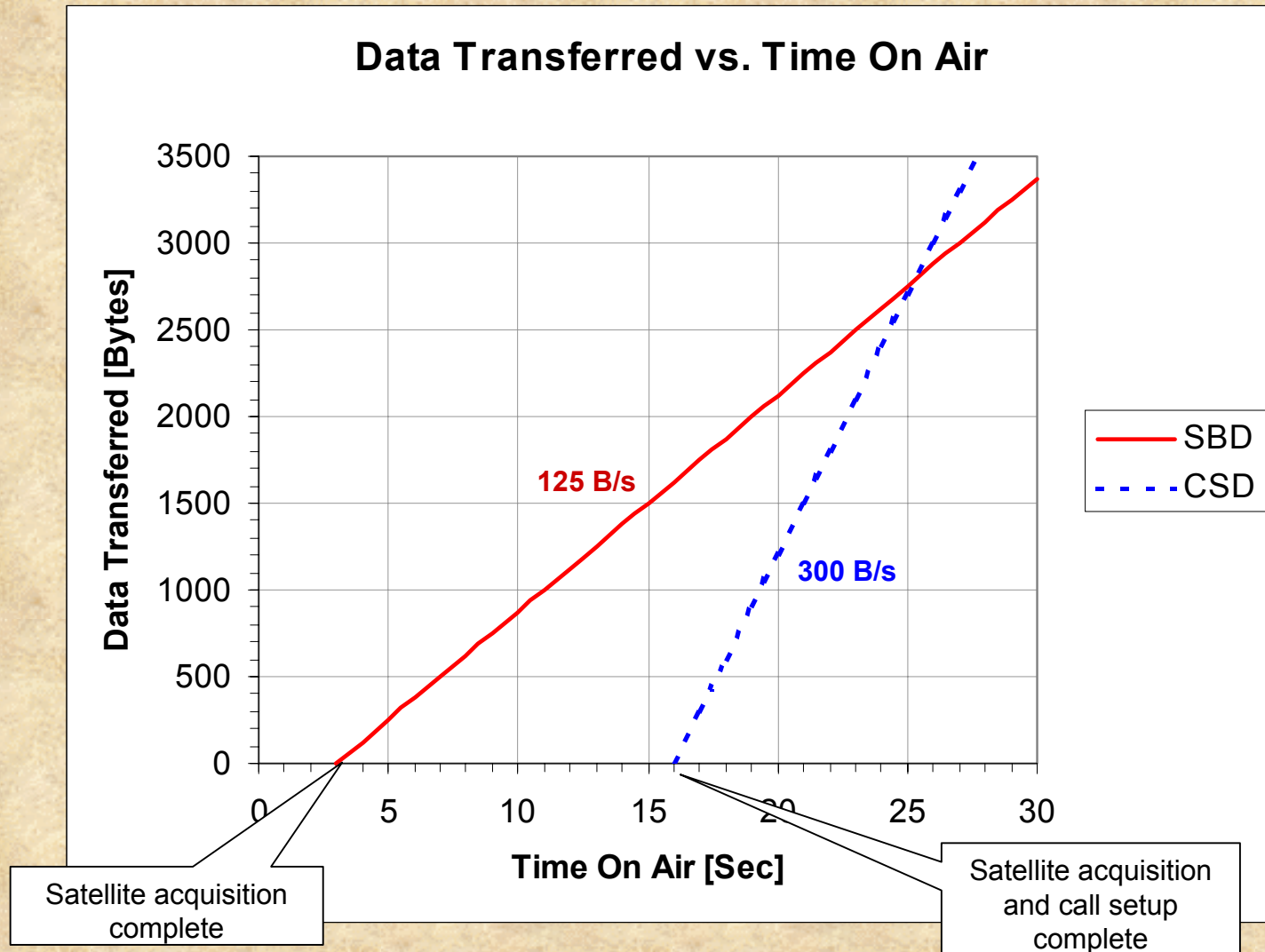
Short Burst Data

Typical Call Flow





Comparison of Short Burst Data & Circuit Switched Data





Short Burst Data

Service Description



- Each SBD call can transfer
 - Up to 1960 data bytes from field to gateway
 - Up to 1890 data bytes from gateway to field
- The gateway
 - Forwards the payload data to its final destination
 - Typically a NIPRnet connection to an application server
 - Five core delivery options currently operational
 - Informs the field unit how many messages are waiting
- Compared to circuit switched data (CSD)
 - SBD gets on-and-off the air very quickly
 - SBD utilizes fewer gateway resources
 - Can support larger numbers of active deployed units
 - CSD must complete a more lengthy call setup procedure
 - Worthwhile for larger file transfers



SBD Subscriber Devices (SSD)

Field Equipment Options



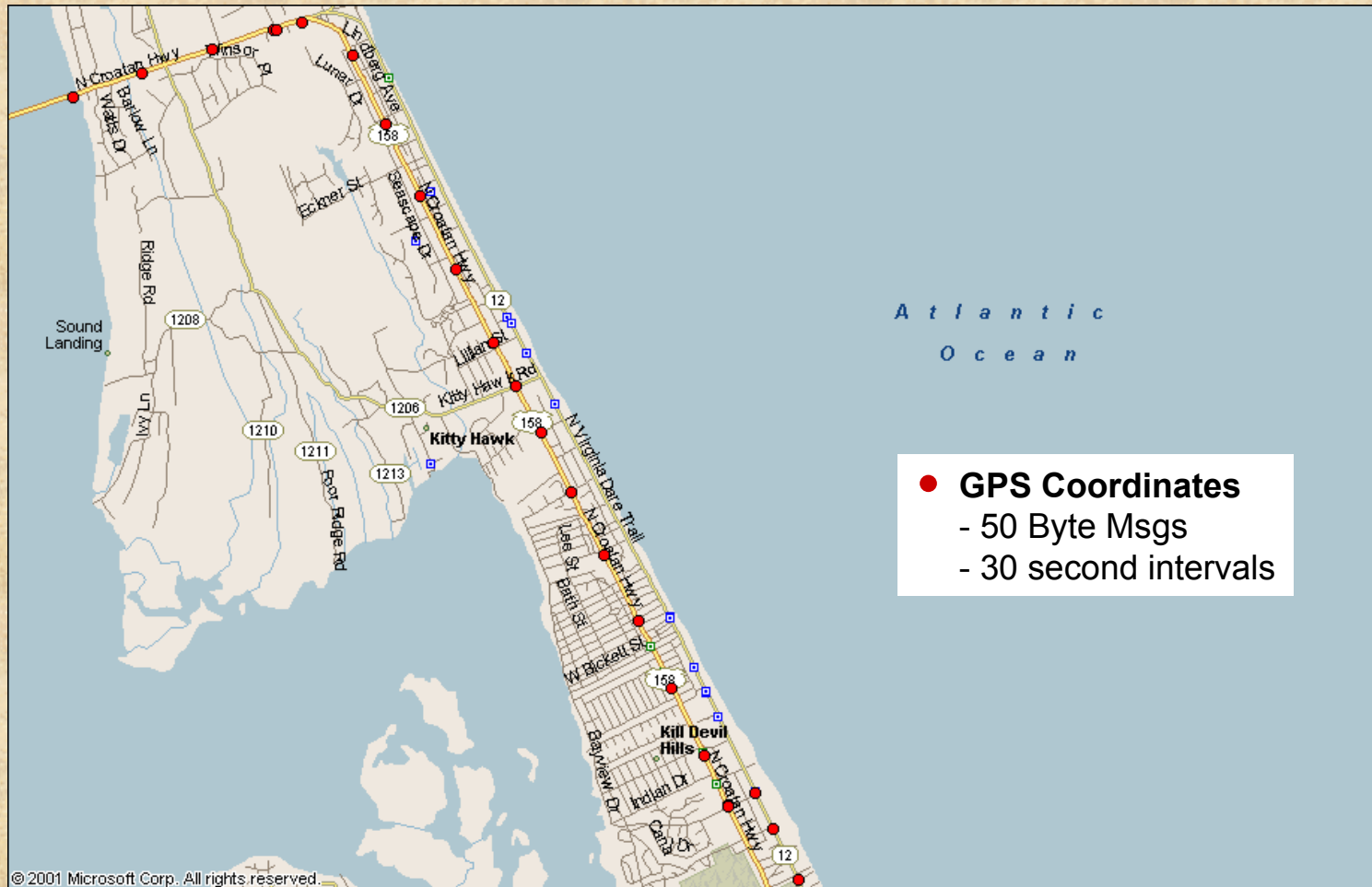
- Subscriber devices (“satellite phones”)
 - 9505 Handset
 - Best suited for man-in-the-loop applications
 - 9522 L-Band Transceiver (LBT)
 - Best suited for “embedded” systems and unattended applications
- Both units generally require an external CPU
 - A DTE device communicates with the SSD over serial line
 - Laptop
 - PDU
 - Embedded device
 - Simple AT-command driven interface





SBD / GPS Tracking

Example application – Outer Banks, NC



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Conclusion

- This presentation has provided a brief introduction to the Short Burst Data service offered by the U.S. DoD EMSS Program
- A brief review of the Iridium satellite system and EMSS service capabilities is also provided
- The presentation has also identified applications where Short Burst Data is a strong candidate for inclusion in end-to-end system solutions
- For further information, refer to the SBD web site at <https://sbd.pac.disa.mil> or send email to admin@sbd.pac.disa.mil

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